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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,796	02/06/2004	Vijayen Veerasamy	014089-002580US	8456

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EXAMINER

PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/773,796	<b>Applicant(s)</b> VEERASAMY ET AL.	
	<b>Examiner</b> Marianne L. Padgett	<b>Art Unit</b> 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 3-5, 7-11 and 16-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-5, 7-11 and 16-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/31/05</u> . | 6) <input type="checkbox"/> Other: _____  |

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1. Claims 3-5, 7-11 & 19-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Use of relative terms that lack clear metes and bounds in the claims, or in the specification or relevant cited prior art, is vague and indefinite. In claim 3, lines 6-7, see "uniform" describing both energy and weight' which may be found used in [0014 & 16 and], but used does not constitute a definition, nor does an example such as the used of a filtered ion stream to promote uniformity is just to take any particular scope of, a specially to the generic claim of uniform energy or weight.

The intent of "straight towards the substrate" in claim 3 is ambiguous. Does it mean not an angle, or doesn't wander around before arriving at the substrate, or straight from where towards the set straight, etc.

In claim 7, "enhancing" remains a relative term that will mean different things to different people, and exactly what is meant by this term is not explicitly set forth. While it has been clarified by the amendment that it is the formation of the ion beam that is being enhanced, one still does not know from what it is being enhanced, hence the scope of enhancement is unclear.

(2) The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

(3) Claims 3-5, 7-11 & 16-22 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 5,858,477. Although the conflicting claims are not identical, they are not patentably distinct from each other because of reasons as set forth in section 7 of the 3/29/2005 action. Applicant's offer to provide a terminal disclaimer to obviate the nonstatutory double patenting rejections, when the case is otherwise in condition for allowance, is noted.

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(4) Claims 3-6 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 5,858,477 in view of Rabalais et al (5,374,318), as applied in section 8 of the 3/29/2005 action.

(5) Claims 3, 16 and 19-20 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rabalais et al (318), as applied in section 9 of the 3/29/05 action.

Note Rabalais et al (318) use of a C<sup>+</sup> ion beam would provide a "uniform" weight due to its limited contents. As what scope is covered by its "substantially uniform impact energy" is not clear, whether it's covered is also not clear, however in column 15 lines 38-45, etc., Rabalais et al (318) disclose  $\pm 1$  eV as atypical energy spread for taught eye on sources, which is considered reasonably within the scope of substantially uniform. Note in the summary of Rabalais et al (318) on column 9, lines 1-9 48-55+, it is disclosed that the process deposits carbon films with diamond or diamondlike (DLC) structure, hence by definition SP<sup>3</sup> carbon-carbon bond structure in the range claimed is inherently present by definition noting that diamondlike is inclusive of amorphous (column 8). Note mentioned of silicon substrates, i.e. semiconductor material (column 8, lines 67-column 9, line 5; column 28, lines 53-68)

(6) Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rabalais et al (318), as applied in section 10 of the 3/29/05 action.

(7) Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rabalais et al (318) as applied to claims 3-4 and 19-20 above, and further in view of Lewin et al (4,486,286) or Baldwin et al (5,616,179), as applied in section 11 of the 3/29/05 action.

(8) Claims 3-5, 16-17 & 20 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Baldwin et al as discussed in section 12 of the 3/29/05 action.

In Baldwin et al, see column 7 teaching semiconductor materials for substrates on lines 4-7 and the abstract & claims and teaches amorphous DLC, with column to lines 5-17 discussing to tetrahedral

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bonding patterns. While Baldwin et al. as discussion of mixtures of graphitic and tetrahedral carbon bonds, in order to be diamondlike, Baldwin et al. deposits would inherently include those that are predominantly tetrahedral carbon-carbon bonds, especially considering teachings that include the use of hydrogen gas to prevent the formation of graphitic carbon bonds (column 9, lines 50 to 59), hence the claim of greater than 15%  $SP^3$  carbon-carbon bonds is considered covered, alternately it would have been considered obvious to one of ordinary skill in the art to adjust parameters and precursors as taught in order to effect diamondlike as opposed to graphite like carbon deposits.

The teachings of the ion source substantially uniformly the radiating the substrate surface (column 9, lines 19-22), and therefore one would expect that both the distribution of energy and the distribution of types of the ions and their weight would be uniform across the substrate, thus reading on the newly claimed uniform limitations.

(9) Claims 3, 5 & 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewin et al, combined with Baldwin et al or Rabalais et al (318), as applied in section 13 of the 3/29/05 action.

(10) With respect to the ion beam claims of 7-11, it was noted that Lewin et al to lack inductive ionization process, and that their magnetic coils are stationary. The quadrupole magnets in Rabalais et al (318) appear to be employed not on the plasma volume per se, but downstream, nor do they appear to teach any mobility for the magnetic field. The new amendment to play in seven further differentiate from Lewin et al

(11) Claims 3 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2, 13, 24-25 and 29 or claim 22 of U.S. Patent No. 6,827,977 B2 or 6,663,753 B2, respectively. Although the conflicting claims are not identical, they are not patentably distinct from each other, because of reasons as applied in section 15 of the 3/29/2005 action. Note that the argument that these patents with overlapping inventors, which are co-pending with

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the present application, cannot be applied in obvious type double patenting rejection, is not a valid argument, as such patents are applicable to any kind of double patenting rejection if their effective filing date is a year before or less than the filing date of the application they are being applied against.

Claims 3 and 6 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 22 of U.S. Patent No. 6,663,753 in view of Rabalais et al (318) as discussed in sections 15 & 8 of the 3/29/2005 action.

(12) Claims 3 & 5 to are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4-6, 8, 13 and 17 of U.S. Patent No. 6,764,579 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because of reasons as discussed in section 16 of the 3/29/2005 action.

(13) Claims 3 and 5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 5, 7, 10 and 15 of U.S. Patent No. 6,416,816 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because of reasons as discussed in section 17 of the 3/29/2005 action.

Claims 3 and 5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 5, 7, 10 and 15 of U.S. Patent No. 6,416,816 B2 in view of Rabalais et al as discussed in section 17 & 8 of the 3/29/2005 action.

(14) Claim 4 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims (1-2, 13, 24-25 and 29) or (22) or (1, 4-6, 8, 13 and 17) or (1, 5, 7, 10 and 15) of U.S. Patent No. 6,827,977 B2 or 6,663,753 B2 or 6,764,579 B2 or 6,416,816 B2, respectively in view of Rabalais et al (318) or Baldwin et al as discussed in section 18 of the 3/29/2005 action & 8 above.

(15) Claims 3 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 8, 17-18, 24-26, and 28-30 of copending

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Application No. 10/359,298. Although the conflicting claims are not identical, they are not patentably distinct from each other because as discussed in section 19 of the 3/29/2005 action

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 3 and 6 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 8, 17-18, 24-26 and 28-30 of copending Application No. 10/359,298 in view of Rabalais et al as discussed in sections 19 & 8 of the 3/29/2005 action.

This is a provisional obviousness-type double patenting rejection.

(16) Concerning Collins et al (5,556,501) the amendments adding specific deposition precursors, specific magnetic field frequency range, plus requirement to deposit carbon over the substrate have removed Collins et al. as a reference, since while plasma deposition is generically taught neither carbene aides polymers diamondlike or similar deposits are specifically mentioned nor is acetylene as a source material.

(17) Applicant's arguments filed 8/31/05 and discussed above have been fully considered but they are not persuasive..

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of



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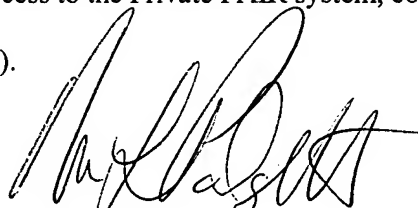
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP 11/14/2005



MARIANNE PADGETT  
PRIMARY EXAMINER